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EXAMINER	
SCHEIBEL, ROBERT C	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/722,676	ROGERS, STEVEN A.	
	Examiner	Art Unit	
	ROBERT C. SCHEIBEL	2619	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 July 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *20-24 and 26-50* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *50* is/are allowed.

6)☒ Claim(s) *20-24,26-46,48 and 49* is/are rejected.

7)☒ Claim(s) *47* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

- Examiner acknowledges receipt of Applicant's Request for Continued Examination (RCE) received 7/7/2008.
- New claims 46-50 have been added.
- Claims 20-24 and 26-50 are currently pending.

Response to Arguments

1. Applicant's arguments, see "Rejections Under 35 U.S.C. 103", filed 7/7/2008, with respect to the rejection of claims 20-24 and 26-45 under 35 U.S.C. 103(a) have been fully considered but they are not persuasive.

In the first paragraph of this section, Applicant summarizes the rejection and indicates that it is traversed. In the next paragraph, Applicant argues that Howe does not disclose the claim limitations because Howe describes a layer 1 physical level switching system. Applicant further indicates that Howe only schedules delivery of "headerless" data rather than scheduling transmission of network packets. Examiner respectfully disagrees. First, Howe does disclose a packet switching system. Consider the passage from line 40 of column 11 to line 17 of column 12 which outlines the objects and benefits of Howe. This section indicates that the invention "established a means ***to deliver packets***, cells, or frames ***over a packet switched network*** in a way that guarantees that they will be delivered on-time…" (emphasis added). Further, while it is true that an alternative embodiment of Howe allows for the use of headerless packets to improve efficiency (see Figure 47 and the associated description in the specification), this is merely an

alternative embodiment. This embodiment is by no means required in Howe as suggested by the applicant. As indicated in the passage above, Howe deals with the delivery of packets over a packet switched network. For at least these reasons, the rejection of claims 20-24 and 26-45 is maintained herein.

2. Applicant's arguments, see the section titled "New Claims" on pages 14-15, filed 7/7/2008, with respect to new claims 46, 48, and 49 have been fully considered but they are not persuasive. The rejections of these claims below indicate why they are not considered allowable over the prior art of record.

3. Applicant's arguments, see the section titled "New Claims" on pages 14-15, filed 7/7/2008, with respect to new claims 47 and 50 have been fully considered and are persuasive. As indicated below, claims 47 and 50 contain allowable subject matter.

Continued Examination Under 37 CFR 1.114

4. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 7/7/2008 has been entered.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims **20-24 and 26-45** are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,611,519 to Howe in view of U.S. Patent 6,240,084 to Oran et al.

Regarding claim **20**, Howe discloses a method of eliminating packet loss at a packet-switching device (lines 45-49 of column 11 discloses that Howe eliminates packet loss ("without being discarded or dropped")), comprising the steps of: (1) collecting in a first device a plurality of different data signals (see lines 57-63 of column 30 which discloses collecting a data signal (voice input) in the Internet Phone, as well as lines 64-66 of column 21 which indicates that a plurality of data signals (audio and video, for example) are sent from the source); (2) converting each of the plurality of data signals into digital form (see lines 57-63 of column 30 which discloses digitizing the data signal); (4) in the CPU of the first device, converting the digital data into network packets destined for delivery to the packet-switching device (see lines 57-63 of column 30 which discloses packetizing the digitized data; the CPU is not explicitly disclosed, but is addressed below); and (5) in the CPU of the first device, scheduling the transmission of the network packets (discussed throughout; see Figure 43 for example) to the packet-switching device (the edge node) in such a way as to eliminate packet loss in the packet-switching device that would otherwise occur if the network packets had been processed by separate devices coupled to the packet-switching device (lines 45-49 of column 11 discloses that this scheduling

eliminates packet loss ("without being discarded or dropped")), wherein packet loss is eliminated without the need for retransmission to the packet-switching device by coordinating the transmission from the first device to avoid contention among transmitters for the packet-switching device, in such a way as to eliminate queue overflow in the packet-switching device (this is clear from the scheduling method of figure 43; further, lines 8-12 of column 3 indicate that this scheme avoids the buffer overloading that occurs in traditional networks).

Similarly, regarding claim **29**, Howe discloses a device configured to eliminate packet loss at a packet-switching device (lines 45-49 of column 11 discloses that Howe eliminates packet loss ("without being discarded or dropped")), the device comprising: a CPU (see lines 46-53 of column 15); an internal timing system capable of synchronizing with one or more external time sources (synchronization means 21 of Figure 6); and a packet network interface connectable to a packet-switching device (the interface connected to communications path 11 of Figure 6; see lines 57-63, for example, which clearly indicate that packets are transmitted from the device to the edge node via this interface), wherein the device is configured to perform the steps of: (1) collecting a plurality of different data signals (see lines 57-63 of column 30 which discloses collecting a data signal (voice input) in the Internet Phone, as well as lines 64-66 of column 21 which indicates that a plurality of data signals (audio and video, for example) are sent from the source); (2) converting each of the plurality of data signals into digital form (see lines 57-63 of column 30 which discloses digitizing the data signal); (4) in the CPU, converting the digital data into network packets destined for delivery to the packet-switching device (see lines 57-63 of column 30 which discloses packetizing the digitized data; the CPU is not explicitly disclosed, but is addressed below); and (5) in the CPU, scheduling transmission of the network packets

(discussed throughout; see Figure 43 for example) to the packet-switching device (the edge node) in such a way as to eliminate packet loss in the packet-switching device that would otherwise occur if the network packets had been processed by separate devices coupled to the packet-switching device (lines 45-49 of column 11 discloses that this scheduling eliminates packet loss ("without being discarded or dropped")), wherein packet loss is eliminated without the need for retransmission to the packet-switching device by coordinating the transmission of network packets to avoid contention among transmitters for the packet-switching device, in such a way as to eliminate queue overflow in the packet-switching device (this is clear from the scheduling method of figure 43; further, lines 8-12 of column 3 indicate that this scheme avoids the buffer overloading that occurs in traditional networks).

Regarding claim **37**, Howe discloses a system to eliminate packet loss at a packet-switching device (lines 45-49 of column 11 discloses that Howe eliminates packet loss ("without being discarded or dropped")), the system comprising a plurality of devices, each said device comprising: a CPU (see lines 46-53 of column 15); an internal timing system capable of synchronizing with one or more external time sources (synchronization means 21 of Figure 6); and a packet network interface connectable to a packet-switching device (the interface connected to communications path 11 of Figure 6; see lines 57-63, for example, which clearly indicate that packets are transmitted from the device to the edge node via this interface), wherein each said device is configured to perform the steps of: (1) collecting a plurality of different data signals (see lines 57-63 of column 30 which discloses collecting a data signal (voice input) in the Internet Phone, as well as lines 64-66 of column 21 which indicates that a plurality of data signals (audio and video, for example) are sent from the source); (2) converting each of the

plurality of data signals into digital form (see lines 57-63 of column 30 which discloses digitizing the data signal); (4) in the CPU, converting the digital data into network packets destined for delivery to the packet-switching device (see lines 57-63 of column 30 which discloses packetizing the digitized data; the CPU is not explicitly disclosed, but is addressed below); and (5) in the CPU, scheduling transmission of the network packets (discussed throughout; see Figure 43 for example) to the packet-switching device in such a way as to eliminate packet loss in the packet-switching device (the edge node) that would otherwise occur if the network packets had been processed by separate devices coupled to the packet-switching device (lines 45-49 of column 11 discloses that this scheduling eliminates packet loss ("without being discarded or dropped")), and wherein each said device is connected to the same packet-switching device (see figure 8, for example), and wherein each said device coordinates with the other devices the scheduling of network packets to the packet-switching device so as to eliminate packet loss at the packet-switching device without the need for retransmission to the packet-switching device by avoiding contention among the devices for the packet-switching device, in such a way as to eliminate queue overflow in the packet-switching device (this is clear from the scheduling method of figure 43; further, lines 8-12 of column 3 indicate that this scheme avoids the buffer overloading that occurs in traditional networks).

However, Howe does not disclose expressly the limitations that the device is transmitting the signals over a backplane bus to a CPU (claims 20, 29, and 37), the backplane bus (claims 29 and 37), or a plurality of modules coupled to the backplane bus, where each module is configured to receive data of a different type and present the received data to the CPU over the backplane bus (claims 29 and 37).

However, Oran discloses the limitation of a backplane bus (the bus 26 of Figure 2); a plurality of modules coupled to the backplane bus (the modules coupled to the backplane bus in Figure 2), where each module is configured to receive data of a different type and present the received data to the CPU over the backplane bus; and transmitting the data signals in digital form from step (2) over the backplane bus to the CPU (step 86 of Figure 4). Howe and Oran are analogous art because they are from the same field of endeavor of real time packet data processing. At the time of the invention it would have been obvious to a person of ordinary skill in the art to modify Howe by using the endpoint cards to process the various signals and sending the digital data over a backplane bus as suggested in Figures 2 and 4 of Oran. The motivation for doing so would have been to reduce latencies in processing the data as suggested by Oran in lines 4-12 of column 2. Therefore, it would have been obvious to combine Oran with Howe for the benefit of reduced latency to obtain the invention as specified in claims 20, 29, and 37.

Regarding claims **21, 30, and 39**, Howe discloses the limitations that the scheduling step comprises: from a transmitting node, transmitting a proposed delivery schedule to an intended receiving node (see figure 35; the call setup request is the proposed delivery schedule), wherein the proposed delivery schedule indicates time slots corresponding to times during which the transmitting node proposes to transmit packets to the intended receiving node (see figure 42 which provides more detail on the call setup request message; the desired start time and the periodic interval indicate the time slots when the transmitting node proposes to transmit packets);

receiving from the intended receiving node an indication as to whether the proposed delivery schedule is acceptable to the intended receiving node (see figure 35 which indicates in

the box starting "If Terminating Edge Node…" that an accept message is sent back to the previous node if the requested times are available); and

if the proposed delivery schedule is acceptable, transmitting packets to the intended receiving node according to the proposed delivery schedule (this is disclosed throughout; consider lines 37-42 of column 4, for example).

Regarding claims **22, 31, and 40**, Howe discloses transmitting the query in the call setup message of figure 35. This is a query in that the receiving node can send feedback if this proposed schedule is not acceptable (see mode 2 in figure 36). The step of receiving from the intended receiving node a reception map indicating time slots during which transmission to the intended receiving node would not conflict is disclosed in the next best scheduled time of mode 2 of figure 36. The step of from the transmitting node, transmitting a proposed transmission map indicating time slots compatible with the reception map, during which the transmitting node intends to transmit packets is disclosed in steps 4 and 5 in columns 10 and 11 which indicate that the transmitting node will send another call setup message as part of the negotiation when it receives feedback from the receiving node. The limitation of the transmitting packets according to the proposed transmission map is disclosed throughout; consider lines 37-42 of column 4, for example.

Regarding claims **23, 32, and 41**, the last two steps are disclosed as indicated in claim 22 above. The step of transmitting a bandwidth requirement to an intended receiving node is disclosed in figure 42 in the bits per packet and packets per second fields which indicated a maximum bandwidth required to support the request.

Regarding claims **24, 33, and 42**, Howe discloses transmitting a query (call setup message of figure 35) to a designated master node for a LAN-wide (the schedule is setup from end-to-end) transmission map (this is a query in that the receiving node can send feedback if this proposed schedule is not acceptable (see mode 2 in figure 36)); receiving from the master node a LAN-wide transmission map indicating time slots during which transmission to an intended receiving node would not conflict with other transmitters (the next best scheduled time of mode 2 of figure 36); transmitting to the master node a proposed transmission map compatible with the LAN-wide transmission map, said proposed transmission map indicating time slots during which the transmitting node intends to transmit packets to the intended receiving node (steps 4 and 5 in columns 10 and 11 which indicate that the transmitting node will send another call setup message as part of the negotiation when it receives feedback from the receiving node); and transmitting packets to the intended receiving node according to the proposed transmission map (disclosed throughout - consider lines 37-42 of column 4, for example).

Regarding claims **26, 34, and 43**, Howe discloses the limitation that the packet-switching device is an Ethernet LAN switch in lines 10-15 of column 12.

Regarding claims **27, 35, and 44**, Howe discloses the limitations that the Ethernet LAN switch is coupled to a WAN router. Consider Figure 1 for example. The Mid-Destination Router 3 is a WAN router.

Regarding claims **28 and 36**, Howe does not disclose expressly the limitation that the plurality of different data signals originate from a plurality of local transmitters connected to the first device. Oran discloses this limitation in the telephones connected via analog telephone lines 18 of figures 1 and 2. Howe and Oran are analogous art because they are from the same field of

endeavor of real time packet data processing. At the time of the invention it would have been obvious to a person of ordinary skill in the art to modify Howe so that the video and audio signals originate from local transmitters as shown in Oran. The motivation for doing so would have been to allow ordinary analog telephones and other signal sources to connect to the packet network and thus saving costs by reusing existing technology as suggested in lines 19-21 and lines 54-56 of column 1 of Oran. Therefore, it would have been obvious to combine Oran with Howe for the benefit of connecting ordinary analog telephones to the packet network and thus saving cost to obtain the invention as specified in claims 28 and 36.

Regarding claim **38**, Howe discloses the limitation that at least one of the plurality of devices schedules packet delivery over the LAN by agreeing upon time slots during which network packets will be transmitted to the packet-switching device in the scheduling scheme discussed throughout Howe – see Figures 35, 36, and 43, for example.

Regarding claim **45**, Howe discloses the limitation that the plurality of devices are synchronized via the internal timing systems of the devices such that only one of the devices at a time transmits packets to the packet-switching device via the scheduling method described throughout Howe. Consider the schedule of Figure 37, for example, which indicates that each time slot is reserved for transmission from a particular user.

Regarding claim **46**, Howe discloses the limitation that converting the digital data into network packets comprises generating Internet Protocol (IP) or Ethernet packets destined for delivery to the packet-switching device (lines 11-14 of column 12, which indicates that both the IP and Ethernet standards (and packets) are supported by Howe).

Regarding claim **48**, Howe does not disclose expressly the limitation that each of the plurality of modules is configured to derive its own timing clock individually by referencing the internal timing system via the backplane bus. However, as indicated above, Oran discloses the plurality of modules which are connected to the backplane bus. Oran further discloses a time slot assigner (TSA) circuit 60 in Figure 3 which clearly indicates that the modules have their own timing clock to drive this time slot assigner circuit. In the above combination of Howe and Oran, it would have been obvious to one of ordinary skill in the art to modify Howe to use the plurality of modules on the backplane bus as taught by Oran and further to derive the timing clock for the time slot assigner of Oran from the internal timing system. As Oran discloses the plurality of modules communicating with the other components of the device over a backplane bus, it would have also been obvious to for the modules to reference the internal timing system via the backplane bus. The motivation for doing so would have been to allow the individual modules to be synchronized with the scheduling scheme which is tied to the internal timing system of Howe. Without this synchronization, the packets will not be delivered properly on the schedule negotiated in Howe. Therefore, it would have been obvious to combine Oran with Howe for the benefit of properly implementing the non-blocked, non-congested scheduling of Howe with the decentralized modules of Oran on the backplane bus to obtain the invention as specified in claim 48.

3. Claim **49** is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,611,519 to Howe in view of U.S. Patent 6,240,084 to Oran et al and in further view of U.S. Patent 5,875,175 to Sherer et al.

Regarding claim **49**, the combination of Howe and Oran discloses all limitations of parent claim 29 as indicated above. However, the combination of Howe and Oran does not disclose expressly the limitation of claim 49. However, the use of software interrupts to initiate the transmission of packets is known in the art. Consider Figure 3B of Sherer, for example, which discloses the limitation of configuring the internal timing system to provide software interrupts to the CPU (the interrupts from the interrupt timer 190 to the CPU process 115) at predetermined time intervals to initiate transmission of said network packets (as shown in Figure 3B, this interrupt triggers communication with the scheduler to transmit a packet; see also lines 6-18 of column 11 which describes how the interrupt controls the transmission of a scheduled packet). Howe and Oran are analogous art as they are in the same field of endeavor of packet scheduling. At the time of the invention, it would have been obvious to modify the above combination of Howe and Oran to use an interrupt mechanism similar to that of Sherer. The motivation for doing so would have been to allow a portion of the scheduler to be implemented in software and thus more easily upgradeable. Therefore, it would have been obvious to one of ordinary skill in the art to combine Sherer with Howe and Oran for the benefit of easier upgrades to obtain the invention as specified in claim 49.

Allowable Subject Matter

4. Claim **50** is allowed.

5. Claim **47** is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ROBERT C. SCHEIBEL whose telephone number is (571)272-3169. The examiner can normally be reached on Mon-Fri from 8:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wing F. Chan can be reached on 571-272-7493. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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7/20/08